AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A process for extracting a substance from one of at least two immiscible fluid phases comprising the steps of:

a) providing at least a first fluid and a second fluid that, after mixing, form at least two immiscible fluid phases, wherein the first fluid contains at least one substance that is extractable by the second fluid;

b) mixing the first fluid and second fluid by means of at least one static micromixer; and

c) allowing the at least two immiscible fluid layers to separate

wherein:

said at least one static micromixer comprises at least one component in the form of a disk (1);

said disk (1) comprises a single mixing zone (5), at least one inlet opening (2) disposed in a plane of said disk for introduction of at least one feed stream into a linking channel (3) and with at least one outlet opening (4) disposed in the plane of said disk for outflow of the feed stream directly into said single mixing zone (5), said at least one inlet opening (2) being connected with said at least one outlet opening (4) in a communicating manner via said linking channel (3) which is disposed in the plane of said disk;

said linking channel (3) is divided once into ~~two or~~ more than two part channels (7) by microstructure ~~units~~ parts (6) immediately ~~before~~ prior to opening into the mixing zone (5), and each of the part channels (7) has a respective width in a millimeter to sub-millimeter range ~~that~~ and said width is smaller than a width of the mixing zone (5); and

said microstructure ~~units~~ parts (6) are in contact with said mixing zone.

2. (previously presented) The process as defined in claim 1, wherein the micromixer comprises a housing (11) at least 2 fluid inlets (12a), and at least one fluid outlet (16), and the housing (11) contains two or more of said at least one component in the form of a disk (1) arranged into a stack.

3. (currently amended) The process as defined in claim 2, wherein ~~wherein~~ a plurality of disks (1) are superposed on one another so that the inlet openings (2) form subsidiary channels for introducing the liquid phase that is to be mixed, the mixing zones (5) together form a main channel for removing the mixed phase and the main channel and subsidiary channels extend through the stack.

4. (previously presented) The process as defined in claim 3, wherein an extraction agent is conveyed through the main channel and the first fluid containing the substance to be extracted is conveyed through at least one subsidiary channel of the micromixer.

5. (previously presented) The process as defined in claim 1, wherein, at the outlet into the mixing zone (5), the widths of the part channels (7) of the disks (1) are from 1 μm to 2 mm.

6. (previously presented) The process as defined in claim 1, wherein the ratio of the greatest width of the linking channel (3) and/or the width of the inlet opening (2) to the width of the part channels (7) of the at least one disk (1) is greater than 2.

7. (previously presented) The process as defined in claim 1, wherein the ratio of the length to the width of the part channels (7) of the at least one disk (1) is from 1:1 to 20:1.

8. (previously presented) The process as defined in claim 1, wherein the ratio of the width of the mixing zone (5) to the width of the part channels (7) of the at least one disk (1) is greater than 2.

9. (previously presented) The process as defined in claim 1, wherein the at least one disk (1) is additionally provided with at least one flow-through opening (9).

10. (previously presented) The process as defined in claim 1 wherein at least one of the inlet openings (2) or flow-through openings (9) or the mixing zone (5) of the at least one disk (1) is enclosed by the plane of the disk and the linking channel (3) is formed by an indentation.

11. (previously presented) The process as defined in claim 1, wherein at least one of the inlet openings (2) or flow-through openings (9) or the mixing zone (5) of the at least one disk (1) is disposed at the edge of the disk or as a recess at the edge of the disk.

12. (previously presented) The process as defined in claim 1, wherein the at least one disk (1) is provided with at least two inlet openings (2) for at least two different fluid streams and each inlet opening (2) is connected with the mixing zone (5) through a linking channel (3).

13. (previously presented) The process as defined in claim 1, wherein the at least one disk (1) is provided with two inlet openings (2) for two different fluid streams, each inlet opening (2) being connected with the mixing zone (5) through a linking channel (3), and the outlet openings (4) of the two linking channels (3) are disposed opposite one another.

14. (previously presented) The process as defined in claim 1, wherein the outlet openings (4) of the at least one disk (1) are arranged on a circular line.

15. (currently amended) The process as defined in claim 1, wherein the at least one disk (1) is provided with additional through-holes (12) and additional part channels (13) that are integrated into the microstructure ~~units~~ parts (6) and are separated from the part channels (7).

16. (currently amended) The process as defined in claim 3, wherein the linking channels (3) of the disks (1) are formed by indentations, and the linking channels (3) before opening into the mixing zone (5) are divided into part channels (7) by the microstructure ~~units~~ parts (6) disposed on the disks (1).

17. (currently amended) The process as defined in claim 3, wherein the linking channels (3) of the disks (1) are formed by recesses in the disks (1), the disks being disposed as intermediate disks between a cover disk and a bottom disk, and the linking channels (3) before opening into the mixing zone (5) are divided into part channels (7) by microstructure ~~units~~ parts (6) disposed on the cover disks and/or bottom disks.

18. (previously presented) The process as defined in claim 1, wherein the flow rate of the fluid stream into the mixing zone (5) is greater than the flow rate of the fluid mixture within the mixing zone.

19. (previously presented) The process as defined in claim 1, wherein the mixing in the mixing zone occurs at least in part by turbulence.

20. (new) A process for extracting a substance from one of at least two immiscible fluid phases comprising the steps of:

a) providing at least a first fluid and a second fluid that, after mixing, form at least two immiscible fluid phases, wherein the first fluid contains at least one substance that is extractable by the second fluid;

b) mixing the first fluid and second fluid by means of at least one static micromixer; and

c) allowing the at least two immiscible fluid layers to separate

wherein:

said at least one static micromixer comprises at least one component in the form of a disk (1);

said disk (1) comprises a single mixing zone (5), at least one inlet opening (2) disposed in a plane of said disk for introduction of at least one feed stream into a linking

channel (3) and with at least one outlet opening (4) disposed in the plane of said disk for outflow of the feed stream directly into said single mixing zone (5), said at least one inlet opening (2) being connected with said at least one outlet opening (4) in a communicating manner via said linking channel (3) which is disposed in the plane of said disk;

said linking channel (3) is divided once into more than two part channels (7) by microstructure parts (6) immediately prior to opening into the mixing zone (5), and each of the part channels (7) has a respective width in a millimeter to sub-millimeter range and a length that is sufficient for flow control but which minimizes pressure for a given throughput and said width is smaller than a width of the mixing zone (5).

21. (new) The process as defined in claim 20, wherein a length-to-width ratio of each of the part channels (7) is 8:1 to 12:1 and a width of each of the part channels is from 5 μm to 250 μm.

22. (new) A process for extracting a substance from one of at least two immiscible fluid phases, said process comprising the steps of:

a) delivering a first feed stream of a first fluid from a first inlet opening (2) of a static micromixer through a first linking channel (3) to a first outlet opening (4) and directly into a mixing zone (5) of said micromixer, said first feed stream being divided only by microstructure parts (6) into part channels (7) immediately prior to entering said mixing zone (5);

b) delivering a second feed stream of a second fluid to said mixing zone (5);

c) mixing the first fluid stream with the second fluid stream in the mixing zone (5); and

d) allowing the first and second fluids to separate

wherein:

said first fluid and said second fluid are immiscible and said substance is extracted from the first fluid into the second fluid or said substance is extracted from the second fluid into the first fluid;

said static micromixer comprises at least one component in the form of a disk (1);

said disk (1) comprises a single mixing zone (5);

said first inlet opening (2), said first outlet opening (4), and said first linking channel (3) are disposed in the plane of said disk;

each of the part channels (7) has a respective width in a millimeter to sub-millimeter range and said width is smaller than a width of the mixing zone (5); and

said microstructure parts (6) are in contact with said mixing zone.

23. (new) The process as defined in claim 22, wherein said second feed stream is delivered from a second inlet opening (2) of said static micromixer through a second linking channel (3) to a second outlet opening (4) and directly into said mixing zone (5) of said micromixer, said second feed stream being divided only by microstructure parts (6) into part channels (7) immediately prior to entering said mixing zone (5);
wherein:

said static micromixer comprises at least one component in the form of a disk (1);

said disk (1) comprises a single mixing zone (5);

said second inlet opening (2), said second outlet opening (4), and said second linking channel (3) are disposed in the plane of said disk;

each of the part channels (7) has a respective width in a millimeter to sub-millimeter range and said width is smaller than a width of the mixing zone (5); and

said microstructure parts (6) are in contact with said mixing zone.